lets growing out of the upper surface of the fronds which will grow separately when properly detached and planted. Still others bear bulbils, some on the rachis, or fern leaf stem, and some even on the roots. Besides this, florists can do wonderful things to multiply plants. Among others they understand how to cut up fronds of the hart's-tongue fern and by planting the pieces produce new plants, much, I suppose, as one plants a begonia leaf.

The spores of most ferns, though so very tiny, possess a wonderful vitality. I have read of lost species being regained by planting spores of specimens that had been in press for many years. On account of this remarkable vitality some facetious writer suggests that our ferns might be the means of starting vegetation on some new planet. Their spores are so small and light that they might be caught up and carried by the wind beyond our atmosphere and being then in cold storage, as it were, could travel on and on for years until attracted by some new planet on which they would alight and there begin to grow.

CAMBRIDGE, MASS.

Recent Fern Literature

M. Henri Gadeau de Kerville has generously presented to the Society, in a finely printed and beautifully illustrated pamphlet of 66 pages, the second series of his "Notes sur les Fougères" (Notes on Ferns), nos. 6 to 11, inclusive;[1] and they may now be borrowed by any member who is interested and can read French. M. Gadeau de Kerville is especially interested in "freak" forms, their nature and origin. He has investigated the

[1] For a review of the first series, see this Journal 8: 23, 1918.

cause of abnormal forking in ferns, finding it to be physiological. He has described semi-fertile fronds of *Blechnum Spicant*, intermediate between normal fertile and normal sterile forms, which he thinks are nearly like the fronds of an original monomorphic ancestor of the species. From the fact that the simply pinnate *Blechnum Spicant*, like our own Christmas fern, sometimes produces fronds in which the lowest pair of pinnae are pinnatifid while the others remain simple, he argues that species like *Polystichum tripteron* Kze., in which such a condition is now normal, were originally of teratological origin. He has tested the taxonomic value of some, often much-named, varieties. He found deeply cut, forked, and crested fronds of *Asplenium Nidus* and *A. Hemionitis* on the same rootstocks with normal ones. He produced marked variation in leaf-form in plants of *Polystichum aculeatum* by exposing them to alternate periods of heat and cold. By transplanting specimens of *Pteridium aquilinum*, f. *undulatum* Bréb. (a variant recognized in many European floras) to a sunny place in his garden, he got perfect fronds of the typical form from the same rootstocks which the year before had been producing the variant. From these facts he concludes that such variations are of no importance in classification and protests earnestly against giving them scientific names.[2]

Carl Christensen has determined the pteridophyta among the Chinese plants collected by Dr. Harry Smith during the years 1921 and 1922. The results he has now published in the form of three lists, one of 31 species from the province of Chili, one of 9 from Yunnan, and,

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[2] Gadeau de Kerville, Henri. Notes sur les Fougères, sixieme-onzieme. Pp. 255–321, pls. 7, figs. 16. Rouen, 1922.

third and most important, an enumeration of all the fern-worts hitherto reported from Sze-chuan. This includes 320 species; but Mr. Christensen believes that too many species have been described from China in recent years and that this total will be considerably reduced by further study. He has himself been able to see the types of a number of species rather vaguely described by J. G. Baker and Christ and has reduced a large proportion of them, especially of Christ's, to synonymy. This definite disposal of hitherto doubtful plants is one of the most valuable features of the present work.

Three species not before known from China, *Dryopteris stegnogramme*, *Cystopteris montana*, and *Equisetum variegatum*, are recorded. Six new species, in *Woodsia*, *Asplenium*, *Dryopteris*, *Pellaea*, and *Cheilanthes*, are described and illustrated.[3]

J. A. Crawford has described the collection of hardy ferns in the New York Botanical Garden. It is placed on the east and north sides of a large outcrop of native rock, shaded by good-sized trees. A miniature brook has been made to flow down from the summit of the rock. In the moist terraces along its course and the artificial bog which it waters and on the rock itself, some of whose crevices have been filled with limestone for the sake of such species as like it, are growing 34 native ferns (including climbing fern, two grape ferns, Scott's spleenwort, and the slender and purple cliff-brakes) and three exotics from Japan and South America.[4]

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[3] Christensen, Carl. Plantae sinenses a Dre. H. Smith annis 1921–22 lectae. III. Pteridophyta. Medd. Göteborgs Bot. Trädg. I, 41–110, pls. 16–20. 27 Oct., 1924.

[4] Crawford, J. A. Hardy Ferns. Journ. N. Y. Bot. Gard. 24: 114–119. June, 1923.

Prof. H. S. Conard believes that for every floristic district of his state (Iowa) there should be a "simple and convenient manual of the local flora." Toward this end he has prepared a comprehensive little manual of the pteridophytes of the vicinity of Grinnell. It gives brief descriptions of the larger groups, genera, and species, and keys to the last where a genus contains more than one. Derivation of generic names, habitats, local stations, common names, general ranges, and time of fruiting of species are recorded, as well as occasional notes containing miscellaneous information. Some of the evidently local common names are interesting, as "snake grass" for *Equisetum laevigatum* and "prairie fern" for *Cystopteris fragilis*. We do not think, however, that we shall follow Prof. Conard in referring to the walking fern as "root-leaf Camptosorus." Nor do we think that Grinnell is likely to become a mecca for fern lovers. Its entire fern census includes only five fern allies, one grape fern and 18 true ferns, and of this total of 24, 16 are reported as rare.[5]

All fern-lovers should be interested in the following clipping from a Syracuse, N. Y., newspaper:—

"The Solvay Process Company has notified botanists connected with Syracuse University that due notice will be given before ferns on the tract of land between Jamesville and High Bridge, which it is now working, are destroyed by quarry operations."

The ferns referred to are, of course, hart's-tongue. Eventually, the company expects to remove all vegetation from the tract, but its action in giving notice to in-

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[5] Conard, H. S. A manual of the ferns and "fern allies" of Grinnell and vicinity. Proc. Iowa Acad. Sci. 29: 317–327, 1922 (so dated, but apparently not actually issued in that year).